

**BELTRONICS**<sup>®</sup>  
PERFORMANCE RULES.™

*RX45*  
Professional Series

Beltronics  
5442 West Chester Road  
West Chester OH 45069-2950

U.S. Customer Service:  
1. 800. 341. 2288  
[www.beltronics.com](http://www.beltronics.com)

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Beltronics Pro RX45

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Q U I C K - I N S T A L L E D P R O T E C T I O N

*RX45*  
Professional Series

Owner's Manual

R A D A R • L A S E R • S A F E T Y • D E T E C T O R

Your new Beltronics RX45 is a complete custom-installed radar/laser detector.

The Beltronics RX45 includes full X, K, Ku and SuperWide Ka radar capability, Digital Signal Processing (DSP) for superior range and reduced false alarms, our patented Mute and AutoMute, audible and visual band alerts, and all the performance you'd expect from Beltronics.

In addition, your new Beltronics RX45 introduces a new level of Radar/Laser defense including:

- Supercharged radar performance, for superior K, and Ka-band sensitivity
- Advanced Preferences lets you instantly set up to 5 customized features
- Exclusive AutoScan™ mode drastically reduces false alarms, plus Highway and Auto NoX sensitivity modes
- Ultra-bright alphanumeric display uses 280 LEDs for crystal clear information
- Exclusive ThreatDisplay™ tracks and displays up to 8 radar signals
- Exclusive TechDisplay provides numeric frequency for any radar signal
- Detects and decodes up to 64 Safety Warning Systems signals
- High-Speed A/D converter dramatically improves radar detection range
- Miniature display controller allows easy access to information and controls

If you've used a radar detector before, a review of the Quick Reference Guide on pages 1 and 2, and the Preferences section on pages 12 and 13 will briefly explain the new features.

If this is your first detector, please read this manual in detail to get the most out of your RX45's performance and features.

Please drive safely.

## **IMPORTANT INSTALLATION WARNING:**

***Your new Beltronics RX45 requires installation. Although we've made this the simplest product to install, we do recommend that you consult a 12-volt professional if you don't have experience with automotive installations. If you would like professional installation, simply visit our web site.***

***Attempting to install the Beltronics RX45 without expertise in automotive electronic installations can cause personal injury during the installation, or can damage your RX45 or your vehicle.***

## **FCC NOTE:**

Modifications not expressly approved by the manufacturer could void the user's FCC granted authority to operate the equipment.



▼ Remove card along perforations ▼

## **Beltronics RX45 Quick Reference Card**

There are 5 user-selectable programming options so you can customize your RX45 for your own preferences.

The buttons labeled BRT and SENS are also used to enter the PROGRAM Mode, REVIEW your current program settings, and to CHANGE any settings as desired. The words PGM, RVW, and CHG are located below the push buttons, and are labeled in light gray graphics.

### **How to use Preferences**

**1** To enter Programming, press both buttons down for 2 seconds. The RX45 will beep, and will display **Program**. (Brightness is at maximum brightness during this process.)

**2** Then press the **RVW** button to review the current settings. You can either tap the button to change from item to item, or hold the button to scroll through the items.

**3** Press the **CHG** button to change any setting. You can either tap the button to change from setting to setting, or hold the button to scroll through all the options.

**4** To leave Programming, simply wait 8 seconds without pressing any button. The unit will display **Complete**, accompanied by an audible tone or voice message, and return to normal operation.

### **Factory Default Settings**

To reset the RX45 to its original factory settings, press and hold the "BRT" and "SENS" buttons while turning the power **□** on. The display will provide a **Reset** message, accompanied by an audible tone, acknowledging the reset.

**An example**  
Here is how you would turn RX45's AutoMute feature off.

**1** Enter Programming by holding both buttons down for 2 seconds. The RX45 will beep and display **Program**.

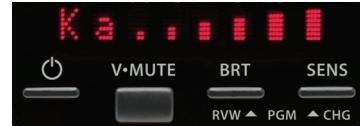
**2** Then hold the RVW button down. The RX45 will scroll through the categories, starting with Pilot (**Pilot**), then Signal Strength Meter (**Meter**), and then AutoMute (**aMute**).

**3** Release the REVIEW button when the RX45 shows the AutoMute item. Since the factory setting is for AutoMute to be on, RX45 will display **aMute ON**.

*If you accidentally don't release the Review button in time, and RX45 goes to the next category, hold the Review button down again, and after RX45 scrolls through all categories, it will begin again at the top of the list.*

**4** Press the CHG button to change from **aMute ON** to **aMute OFF**.

**5** To exit the Preferences, simply wait 8 seconds without pressing any button. RX45 will display **Complete**, accompanied by an audible tone or voice message, and return to normal operation.



▼ Remove card along perforations ▼

## Beltronics RX45 Quick Reference Card

Press the **REVIEW** button to go from one category to the next

Press the **CHANGE** button to change your setting within a category

PILOT LIGHT (Power-on indication) Pilot **H/W/Y** \*Full word: Highway, AutoScan, Auto NoX  
Pilot **H** Letter: H or A or ANX  
Pilot **U** Vehicle voltage

SIGNAL STRENGTH METER Meter **STD** \*Standard signal strength meter  
Meter **THT** ThreatDisplay  
Meter **TEC** TechDisplay

AUTOMUTE **aMute ON** \*AutoMute on  
**aMute OFF** AutoMute off

VOICE **Voice ON** \*Voice alerts on  
**Voice OFF** Voice alerts off

BANDS **Bands DFT** \*Factory default settings  
**Bands MOD** One or more bands have been changed

Turn bands "ON" or "OFF" by pressing the V-MUTE button

X **ON or OFF** (default is on)  
Ku **ON or OFF** (default is off)  
K **ON or OFF** (default is on)  
Ka **ON or OFF** (default is on)  
POP **ON or OFF** (default is off)  
SWS **ON or OFF** (default is off)  
LSR **ON or OFF** (default is on)  
TSR **ON or OFF** (default is off)

\*Factory Default Settings

## Table of Contents

### Introduction

- Congratulations
- IMPORTANT WARNING
- Quick Reference Guide

### Preferences

- How to use Preferences
- Example using Preferences
- Overview of Preferences

**12-15**

### Controls and Features

- Power
- Power-on indication
- Volume Adjust
- AutoMute
- AutoScan / Highway / Auto NoX
- Display Brightness
- Dark Mode
- Audible Alerts

**6-11**

### Technical Details

- Interpreting Alerts
- Specifications
- How Radar Works
- How Laser Works
- How TSR Works
- How Safety Radar Works

**16-23**

**18**

**19**

**20**

**21**

**22-23**

- Signal Strength Meter
- ThreatDisplay
- TechDisplay

### Service

- Troubleshooting
- Service
- Warranty
- Parts and Accessories

**24-26**

**24**

**26**

**26**

**26**

**29**

### Power

To turn the RX45 on or off, simply press the power button located on the far left side of the display controller.

**NOTE: We recommend wiring the RX45 to the vehicle's ignition switch so it turns on and off with the key.**

### Volume Control/Mute Button

To set your volume level for alerts, press and hold the V•MUTE button located in the center of the display controller. Once you've reached your desired level of audio, simply release the button. The RX45 will remember this setting even when power is turned off.

To mute an audible alert, briefly press this button on the display controller to silence the audio for a specific alert. (The audio will alert you to the next encounter.) *Page 7*

### AutoMute

Beltronic's patented AutoMute automatically reduces the volume level of the audio alert. *Page 7*

If you prefer, you can turn AutoMute off. *Page 12*



### Matrix Display

RX45's display will show "Highway", "AutoScan," or "Auto NoX" as its standard power-on indication. *Page 6*

If you prefer, you can choose other power-on indications. *Pages 8-10*

During an alert, the display will indicate radar band, and a precise bar graph for the signal strength. *Page 9*

You can program the RX45 for ThreatDisplay mode, which displays multiple radar signals and their signal strength, or choose our new TechDisplay mode, which provides the actual numeric frequency of the radar signal. *Pages 10-11*

The display can also show Safety Radar text messages. *Pages 22-23*

### BRT Button

Press to adjust display brightness. There are three brightness settings, plus Dark Mode.

In the Dark Mode RX45's display will remain dark and only the audio will alert you. *Page 9*

### SENS Button

The sensitivity button, (SENS) toggles between sensitivity modes including "AutoScan", "Auto No X", and "Highway" settings. In general, we recommend the AutoScan mode. *Page 7*

### Preferences

RX45 is pre-programmed at the factory ready to go once it is installed – just turn it on. But you can also easily change 5 features for your preferences. Press both the BRT and SENS buttons to enter the Preferences, then easily Review or Change your settings. *Pages 12-14*

### Power

The Beltronics RX45 was designed to turn on and off with the ignition once it is installed. This is accomplished by connecting the 12-volt interface to a switched ACC connection at the fuse panel. (See installation manual for instructions.)

If you prefer, you may also turn the RX45 on and off by pressing the power button  located on the display controller.

### Power-on indication

After the RX45's start-up sequence is complete, the matrix display will show "Highway", "AutoScan" or "Auto No X" to show which sensitivity mode has been selected.

If you prefer, you can select alternate power-on displays. See the Preferences section for details

### Volume Adjust

To adjust the RX45 to your preferred audio level for alerts, simply press and hold the V•Mute button located on the display controller. The audio will increase/decrease while it is depressed. Once you reach the desired audio level, simply release the button. The RX45 will retain this setting in its memory, even if the system is turned off.

When the optional Laser Shifters are connected, (see Accessories section) the V•Mute button can be used to manually stop "shifting" once you have corrected your speed. Simply press the V•Mute twice during the "Laser Shifting" message and the Shifters will cease to transmit. The Shifters will remain in this state for approximately one minute. Once this time has passed, the shifters will automatically reset. A "Shift On" message will be displayed to verify and acknowledge this reset.

### Mute

The V•Mute button, located on the display controller, allows you to silence the audio during an alert.

To mute the audio for a single specific signal, briefly press the V•MUTE button. After that radar encounter has passed, the audio will automatically reset and the RX45 will alert you to the next encounter.

### AutoMute

Your RX45 has our patented AutoMute feature. After the RX45 alerts you to a radar encounter at your selected volume level, it automatically mutes the volume to a lower level. This keeps you informed without the annoyance of a continuous full-volume alert.

If you prefer, you can turn the AutoMute feature off. See the Preferences section for details.

### AutoScan / Highway / Auto NoX

The "SENS" button selects the RX45's sensitivity setting. We recommend the "AutoScan" mode for most driving.

Beltronics's exclusive AutoScan mode provides long-range warning, with minimum false alarms. In this mode, Beltronics's internal computer continuously analyzes all incoming signals and intelligently adjusts the sensitivity – eliminating the majority of false alarms.

You can also select conventional "Highway", which provides the maximum sensitivity. Auto NoX provides the same sensitivity as "AutoScan" but turns off X-band completely. Full sensitivity is maintained on all other bands.

***NOTE: Before using the RX45 in the "Auto NoX" mode, please make sure your area does not use X-band guns to measure speed.***

### Display Brightness

The RX45's display brightness is automatically adjusted to suit ambient lighting conditions in your car. (The light sensor is located inside the display controller and may dim the display momentarily when accessing the buttons).

If you prefer, you can press the "BRT" button located on the display controller to set your RX45 for a fixed brightness level (Auto, Minimum, Medium, Maximum or Dark).

### Dark Mode

If you select Dark mode on the RX45, the display will not provide any indication that it is on.

***NOTE: When the RX45 is in the Dark Mode, the display will not show visual alerts when it detects signals. Only the audible alert will tell you of detected signals.***

### Audible Alerts

#### **For Radar signals:**

The RX45 uses a Geiger-counter-like sound to indicate the signal strength and type of radar signal being encountered.

When you encounter radar, a distinct Audible Alert will sound and will increase as the signal gets stronger. This allows you to judge the distance from the signal source without taking your eyes from the road.

Each band has a distinct tone for easy identification.

X-band = chirp tone

K-band = buzz tone

Ku-band = chirp tone

Ka-band = double-chirp tone

#### **For Laser signals:**

Since Laser signals are a possible threat no matter how weak, the RX45 alerts you to all laser signals with a full laser alert.

#### **For Safety signals:**

If you have turned on the SWS detection in the RX45's Preferences section, the RX45 will alert you to these signals with a audible double-chirp tone, and a corresponding text message. A complete listing of the text messages is on page 23.

If you haven't turned on SWS in Preferences, the RX45 will not decode these transmissions but will still detect them as K-band radar signal.

### Signal Strength Meter

The RX45's matrix display consists of 280 individual LED's, to provide an intuitive ultra-bright display of signal strength and text messages.

When it detects radar, it displays the band of the radar (X, K, Ku or Ka), and a precise bar graph of signal strength.

### ThreatDisplay

Beltronics's exclusive ThreatDisplay option is an advanced display for experienced detector users. Please use the RX45 for a few weeks to get fully familiar with its other features before using ThreatDisplay.

To use the ThreatDisplay instead of the standard bar graph signal strength meter, you must select Meter THT in the RX45's Preferences (see pages 8-12).

ThreatDisplay simultaneously tracks multiple radar signals. It shows you detailed information on multiple radar signals and their signal strength.

ThreatDisplay can help you spot a change in your normal driving environment; for example, a traffic radar unit being operated in an area where there are normally other signals present.

The ThreatDisplay is actually a miniature spectrum analyzer. It shows what band each signal is, and its signal strength.

Ka9 X2

*Above is the ThreatDisplay if the RX45 was detecting a strong Ka-band and a weak X-band signal.*

As you can see, there are numeric values (1-9) after each band designator. Each number shows a relative signal strength for each signal being detected.

A few more examples will help you better see how the ThreatDisplay works.

K9 X1

*Here Threat Display shows a strong K-band signal, and a weak X-band signal.*

Ka1 X9

*Here Threat Display shows a weak Ka-band signal, and a strong X-band signal.*

#### ThreatDisplay Details

The band designators (X, K, Ku, Ka) will stay on the display for a few seconds after the signal has passed. This allows you to see what the unit detected, even on very brief signals.

However, the numeric values, representing signal strength, continuously change (several times a second) to give you a continuous view of the signal strength of all radar signals present.

### TechDisplay

The RX45's TechDisplay option is also designed for the advanced detector user. In this mode, it will display the actual numeric radar frequency being received

K 24.150

*Display shows a K-band signal at 24.150 GbZ.*

Ka 34.700

*Display shows a Ka-band signal at 34.700 GbZ.*

X 10.525

*Display shows a X-band signal at 10.525 GbZ.*

**NOTE: Even long-time detector users will require a significant amount of time to get familiar with this new level of information.**

## How to use Preferences

There are 5 user-selectable programming options on the RX45. This allows you to set it up the way you prefer.

To access Programming, simply press the buttons that are normally used for brightness (BRT) and sensitivity (SENS) at the same time. Once you access Programming, the BRT button is used to review (RVW) the categories and the SENS button is used to change (CHG) items within the category. Pages 14-15 explain each option in more detail.

### How to use Preferences

**1 To enter Programming, press both buttons and hold for 2 seconds.** The RX45 will beep and display Program. (Brightness is at maximum during this process.)

**2 Then press the RVW button to review the current settings.** You can either tap the button to change from item to item, or hold the button to scroll through the items.

**3 Press the CHG button to change any setting.** You can either tap the button to change from setting to setting, or hold the button to scroll through all the options.

**4 To leave Programming, simply wait 8 seconds without pressing any button.** The unit will display Complete, beep and return to normal operation.

To quickly return to all of the factory defaults, press and hold the BRT and SENS buttons while turning on the unit.

### An example

Here's how you would turn the RX45's AutoMute feature off.

**1** Enter Programming by holding both buttons down for 2 seconds. *The RX45 will beep and display Program.*

**2** Then hold the RVW button down. *The RX45 will scroll through the categories, starting with Pilot (Pilot), then Signal Strength Meter (Meter), then AutoMute (aMute).*

**3** Release the RVW button when the display shows AutoMute. *Since the factory setting is for AutoMute to be on, the RX45 will display aMute ON.*

*If you accidentally don't release the RVW button in time and it goes to the next category, simply hold the RVW button down again until aMute is displayed.*

**4** Press the CHG button to change from aMute ON to aMute OFF.

**5** To complete this change, simply wait 8 seconds without pressing any button. *The display will provide a Complete message, accompanied by an audible tone. This is an indication that the RX45 has returned to its normal operation.*

## Overview of Preferences

Press the **REVIEW** button to go from one category to the next

PILOT LIGHT  
(Power-on indication)

Pilot HWY  
Pilot H  
Pilot V

\* Full word: Highway, AutoScan, AutoNoX  
Letter: H or A or ANX  
Vehicle voltage

SIGNAL STRENGTH METER

Meter STD  
Meter THT  
Meter TEC

\* Standard signal strength meter  
ThreatDisplay  
TechDisplay

AUTOMUTE

aMute ON  
aMute OFF

\* AutoMute on  
AutoMute off

VOICE

Voice ON  
Voice OFF

\* Voice alerts on  
Voice alerts off

BANDS

Bands DFT  
Bands MOD

\* Factory default settings  
One or more bands have been changed

Turn bands on or off by pressing and holding the V•MUTE button

X	ON or OFF (default is on)
Ku	ON or OFF (default is off)
K	ON or OFF (default is on)
Ka	ON or OFF (default is on)
POP	ON or OFF (default is on)
SWS	ON or OFF (default is off)
LSR	ON or OFF (default is on)
TSR	ON or OFF (default is off)

### \*Factory Default Settings

To reset the RX45 to its original factory settings, press and hold the "BRT" and "SENS" buttons while turning the power  on. The display will provide a Reset message, accompanied by an audible tone, acknowledging the reset.

### Pilot Light (Power-on indication)

**NOTE:** When you are using the Dark Mode, the display will be completely dark.

#### PilotHWY (Full description)

In this setting, the RX45 will display Highway, AutoScan, or Auto NoX as its power-on indication. (factory default)

#### Pilot\_H (Letter)

In this setting, the RX45 will display H for Highway, A for AutoScan and ANX for Auto NoX.

#### Pilot\_V (Vehicle voltage)

In this setting, the RX45 will continually display H for Highway, A for AutoScan, and ANX for Auto NoX, plus the vehicle's voltage.

**NOTE:** If the vehicle's voltage drops below 10.5 volts, a low voltage warning will be displayed, followed by an audible alert. A high voltage warning is also given when the vehicle's voltage goes above 16.5 volts.

### Signal Strength Meter

#### MeterSTD (Standard meter)

The meter displays the band, and bar graph showing signal strength. (factory default)

#### MeterTHT (ThreatDisplay)

The meter simultaneously tracks up to 2 Ka-band, 2 K-band, and 4 X-band signals.

#### MeterTEC (TechDisplay)

The meter displays the actual numeric frequency of the radar signal being received.

**NOTE:** See more details on pages 9-11.

### AutoMute

#### aMute\_ON (AutoMute on)

In this setting, the RX45's audio alerts will initially be set to the volume level you selected. However, after a few seconds, the audio level will automatically be reduced to keep you informed, but not annoyed. (factory default)

#### aMuteOFF (AutoMute off)

With AutoMute off, the audio alerts will remain at the volume you set for the duration of the encounter.

### Bands

#### BandsDFT

In this setting, all radar and laser bands are covered for North America. These are the factory settings, and it is highly recommended that you use your RX45 in this mode.

#### BandsMOD

If the bands are changed from the factory default settings, the RX45 will warn you with an audible alert, and associated text message, that one or more bands have been turned off in Programming (i.e."X-Band OFF").

**WARNING:** Only modify bands if you are absolutely certain that there are no traffic radar guns using that specific band in your area.

Although the RX45 has a comprehensive warning system and this handbook is as complete as we can make it, only experience will teach you what to expect from your RX45 and how to interpret what it "tells" you. The radar alerts you receive are affected by the specific type of radar being

### Alert

RX45 begins to sound slowly, then the rate of alert increases until the alert becomes a solid tone. The Signal Meter ramps accordingly.

RX45 emits short alerts for a few seconds and then falls silent only to briefly alert and fall silent again.

RX45 suddenly sounds a continuous tone for the appropriate band received. All segments in the Signal Strength Meter are lit.

A brief laser alert.

RX45 receives weak signals. These signals may be a little stronger as you pass large, roadside objects. The signals increase in frequency.

RX45 alerts slowly for awhile and then abruptly jumps to a strong alert.

used, the type of transmission (continuous or instant-on) and the location of the radar source.

The following examples will give you an introduction to understanding the RX45's warning system for radar, laser and safety alerts.

### Explanation

You are approaching a continuous radar source aimed in your direction.

An instant-on radar source is being used ahead of you and out of your view.

An instant-on radar source or laser source is being used nearby. This kind of alert requires immediate attention!

Laser is being used in the area. Because laser is inherently difficult to detect, any laser alert may indicate a source very close by.

A moving patrol car with continuous radar is overtaking you from behind. Because these signals are reflected (reflections are increased by large objects), they may or may not eventually melt into a solid point even when the patrol car is directly behind you.

You are approaching a radar unit concealed by a hill or an obstructed curve.

### Alert

RX45 alerts intermittently. Rate and strength of alerts may be consistent or vary wildly.

RX45 alerts intermittently. Rate and strength of signal increases with each alert.

RX45 gives an X-band alert intermittently.

### Explanation

A patrol car is traveling in front of you with a radar source aimed forward. Because signals are sometimes reflected off of large objects and sometimes not, the alerts may seem inconsistent.

A patrol car is approaching from the other direction, "sampling" traffic with instant-on radar. Such alerts should be taken seriously.

You are driving through an area populated with radar motion sensors (door openers, burglar alarms, etc.). Since these transmitters are usually contained inside buildings or aimed toward OR away from you, they are typically not as strong or lasting as a real radar encounter.

**CAUTION:** Since the characteristics of these alerts may be similar to some of the preceding examples, over confidence in an unfamiliar area can be dangerous. Likewise, if an alert in a commonly traveled area is suddenly stronger or on a different band than usual, speed radar may be set up nearby.

### Features and Specifications

#### Operating Bands

- X-band 10.525 GHz  $\pm$ 25 MHz
- Ku-band 13.450 GHz  $\pm$ 25 MHz
- K-band 24.150 GHz  $\pm$ 100 MHz
- Ka-band 34.700 GHz  $\pm$ 1300 MHz
- Laser 900nm, 33 MHz bandwidth

#### Radar Receiver / Detector Type

- Superheterodyne, GaAs FET VCO
- Scanning Frequency Discriminator
- Digital Signal Processing (DSP)
- 4-bit high-resolution A-to-D converter

#### Laser Detection

- Quantum Limited Video Receiver
- Multiple Laser Sensor Diodes

#### Display Type

- HP AlGaAs 280 LED Matrix/Text
- Bar Graph or ThreatDisplay™
- Automatic brightness control

#### Power Requirement

- 12VDC, Negative Ground

#### Programmable Features

- Power-On Indication
- Signal Strength Meter
- AutoMute
- Voice
- Bands

#### Sensitivity Control

- AutoScan™, Highway and Auto NoX
- Auto Calibration Circuitry
- Complete VG2 Immunity

#### Dimensions (Inches)

- Display/Controller  
1.00 H x 2.00 W x 0.50 D
- Receiver Unit  
5.40 x 3.70 x 1.05 inches

#### Patented Technology

Product is covered by one or more of the following U.S. patents:

7,576,679 7,397,416 7,388,537 7,098,844  
6,836,238 6,779,765 6,693,578 6,670,905  
6,614,385 6,587,068 6,400,305 6,249,218  
6,127,962 6,069,580 5,668,554 5,600,132  
5,587,916 5,559,508 5,446,923 5,402,087  
5,365,055 5,347,120 5,305,007 5,206,500  
5,164,729 5,134,406 5,111,207 5,079,553  
5,049,885 5,049,884 4,961,074 4,954,828  
4,952,937 4,952,936 4,939,521 4,896,855  
4,887,753 4,862,175 4,750,215 4,686,499  
4,631,542 4,630,054 4,625,210 4,613,989  
4,604,529 4,583,057 4,581,769 4,571,593  
4,313,216 D314,178 D313,365 D310,167  
D308,837 D296,771 D288,418 D253,752  
Canadian patents:  
2,381,585 2,337,077 2,330,964 1,295,715  
1,295,714 1,187,602 1,187,586  
European patents:  
1,145,030 1,090,456  
Other Patents Pending.

### How Radar Works

Traffic radar, which consists of microwaves, travels in straight lines and is easily reflected by objects such as cars, trucks, even guardrails and overpasses. Radar works by directing its microwave beam down the road. As your vehicle travels into range, the microwave beam bounces off your car, and the radar antenna looks for the reflections. Using the Doppler Principle, the radar equipment then calculates your speed by comparing the frequency of the reflection of your car to the original frequency of the beam sent out.

Traffic radar has limitations, the most significant of these being that it typically can monitor only one target at a time. If there is more than one vehicle within range, it is up to the radar operator to decide which target is producing the strongest reflection. Since the strength of the reflection is affected by both the size of the vehicle and its proximity to the antenna, it is difficult for the radar operator to determine if the signal is from a sports car nearby or a semi-truck several hundred feet away.

Radar range also depends on the power of the radar equipment itself. The strength of the radar unit's beam diminishes with distance. The farther the radar has to travel, the less energy it has for speed detection.

Because intrusion alarms and motion sensors often operate on the same frequency as X-Band radar, your RX45 will occasionally receive non-police radar signals. Since these X-Band transmitters are usually contained inside of a building, or aimed toward the ground, they will generally produce much weaker readings than will a true radar encounter. As you become familiar with the sources of these pseudo alarms in your daily driving, they will serve as confirmation that your RX45's radar detection abilities are fully operational.

### How Laser (Lidar) Works

Laser speed detection is actually LIDAR (Light Detection and Ranging). LIDAR guns project a beam of invisible infrared light. The signal is a series of very short infrared light energy pulses, which move, in a straight line, reflecting off your car and returning to the gun. LIDAR uses these light pulses to measure the distance to a vehicle. Speed is then calculated by measuring how quickly these pulses are reflected given the known speed of light.

LIDAR (or laser) is a newer technology and is not as widespread as conventional radar, therefore, you may not encounter laser on a daily basis. And unlike radar detection, laser detection is not prone to false alarms. Because LIDAR transmits a much narrower beam than does radar, it is much more accurate in its ability to distinguish between targets and is also more difficult to detect. **AS A RESULT, EVEN THE BRIEFLY LASER ALERT SHOULD BE TAKEN SERIOUSLY.**

There are limitations to LIDAR equipment. LIDAR is much more sensitive to weather conditions than RADAR, and a LIDAR gun's range will be decreased by anything affecting visibility such as rain, fog, or smoke. A LIDAR gun cannot operate through glass and it must be stationary in order to get an accurate reading.

Because LIDAR must have a clear line of sight and is subject to cosine error (an inaccuracy, which increases as the angle between the gun and the vehicle, increases) police typically use LIDAR equipment parallel to the road or from an overpass. LIDAR can be used day or night.

### How TSR Works

Several manufacturers of traffic flow monitoring systems use K-band transmitters to sense traffic movement. Unfortunately these sensors are transmitting in an "instant on" mode, which creates a false alert. These sensors are positioned approximately 1 mile apart and turn on and off approximately every minute.



These sensors are fully self-contained and roadside-mounted.

Some of the markets where these sensors are located include:

Omaha NE  
Raleigh-Durham NC  
San Francisco CA  
San Jose CA  
Santa Barbara CA  
Ventura CA  
Washington DC  
Dayton OH  
Denver CO  
Everett WA  
Lincoln NE  
New York NY  
Oakland CA  
Olympia WA

Our exclusive TSR anti-falsing software rejects these unwanted signals. Since not all markets have this type of traffic flow system, your detector has been pre-set with TSR turned off.

To turn TSR on, simply visit the Preferences section. Under "Bands", select TSR "on".

## How SWS Works

There are two separate Safety Radar systems in limited use today: Safety Alert, and Safety Warning System (SWS). Both systems use modified K-band radar signals.

From the factory, your RX45 is programmed with safety radar decoding OFF. If Safety Radar is used in your area, your RX45 will display these signals as K-band radar signals instead of safety radar unless you use the Preferences to turn RX45's safety radar decoding ON.

The Safety Alert safety radar system has three possible alerts:

- Safety Vehicle
- Road Hazard
- Train Nearby

The SWS safety radar system has 64 possible messages (60 currently allocated). The SWS messages your RX45 can display are listed on the facing page.

*NOTE: Some of the safety messages have been condensed, so that each message can be displayed on one or two screens on RX45's eight-character display.*

Since Safety radar technology is relatively new and the number of transmitters in operation is not yet widespread, you will not receive Safety signals on a daily basis and should not be surprised to encounter emergency vehicles, road hazards and railroad crossings that are unequipped with these transmitters and, therefore, fail to provide a signal.

As Safety transmitters become more prevalent (the number of operating transmitters is growing every day), these Safety radar signals will become more common.

For more information and details about SWS safety radar, visit their web site at [www.swslc.com](http://www.swslc.com).

## SWS Text Messages

### Highway Construction or Maintenance

- 1 Work Zone Ahead
- 2 Road Closed Ahead/Follow Detour
- 3 Bridge Closed Ahead/Follow Detour
- 4 Highway Work Crews Ahead
- 5 Utility Work Crews Ahead
- 6 All Traffic Follow Detour Ahead
- 7 All Trucks Follow Detour Ahead
- 8 All Traffic Exit Ahead
- 9 Right Lane Closed Ahead
- 10 Center Lane Closed Ahead
- 11 Left Lane Closed Ahead
- 12 *Forfuture use*

### Highway Hazard Zone Advisory

- 13 Stationary Police Vehicle Ahead
- 14 Train Approaching/At Crossing
- 15 Low Overpass Ahead
- 16 Drawbridge Up
- 17 Observe Drawbridge Weight Limit
- 18 Rock Slide Area Ahead
- 19 School Zone Ahead
- 20 Road Narrows Ahead
- 21 Sharp Curve Ahead
- 22 Pedestrian Crossing Ahead
- 23 Deer/Moose Crossing
- 24 Blind/Deaf Child Area
- 25 Steep Grade Ahead/Truck Use Low Gear
- 26 Accident Ahead
- 27 Poor Road Surface Ahead
- 28 School Bus Loading/Unloading
- 29 No Passing Zone
- 30 Dangerous Intersection Ahead
- 31 Stationary Emergency Vehicle Ahead
- 32 *Forfuture use*

### Weather Related Hazards

- 33 High Wind Ahead
- 34 Severe Weather Ahead
- 35 Heavy Fog Ahead
- 36 High Water/Flooding Ahead
- 37 Ice On Bridge Ahead
- 38 Ice On Road Ahead
- 39 Blowing Dust Ahead
- 40 Blowing Sand Ahead
- 41 Blinding Snow Whiteout Ahead
- 42 *Forfuture use*

### Travel Information/Convenience

- 43 Rest Area Ahead
- 44 Rest Area With Service Ahead
- 45 24 Hour Fuel Service Ahead
- 46 Inspection Station Open
- 47 Inspection Station Closed
- 48 Reduced Speed Area Ahead
- 49 Speed Limit Enforced
- 50 Hazardous Materials Exit Ahead
- 51 Congestion Ahead/Expect Delay
- 52 Expect 10 Minute Delay
- 53 Expect 20 Minute Delay
- 54 Expect 30 Minute Delay
- 55 Expect 1 Hour Delay
- 56 Traffic Alert/Tune AM Radio
- 57 Pay Toll Ahead
- 58 Trucks Exit Right
- 59 Trucks Exit Left
- 60 *Forfuture use*

### Fast/Slow Moving Vehicles

- 61 Emergency Vehicle In Transit
- 62 Police In Pursuit
- 63 Oversize Vehicle In Transit
- 64 Slow Moving Vehicle

## Problem

## Solution

RX45 beeps briefly at the same location every day, but no radar source is in sight.

- An X-band motion sensor or intrusion alarm is located within range of your route. With time, you will learn predictable patterns of these signals.

RX45 does not seem sensitive to radar or laser.

- RX45 may be in Auto NoX.

RX45 did not alert when a police car was in view.

- VASCAR, (Visual Average Speed Computer and Recorder) a stopwatch method of speed detection, may be in use.
- Officer may not have radar or laser unit turned on.

RX45 did not provide a Safety signal while within range of an emergency vehicle.

- Safety transmitters may not be commonly used in your area.

The RX45's audible alerts are less loud after the first few alerts.

- RX45 is in AutoMute Mode. See page 4 for details.

The RX45's power-on sequence reoccurs while you are driving.

- A loose power connection can cause RX45 to be briefly disconnected, and will retrigger the power-on sequence.

Your 14-year old son has changed all 5 of the Preferences options.

You can return all of the programming options to the factory defaults by holding down the BRT and SENS buttons while you turn RX45 on.

RX45 will not turn on.

- Check that volume control is ON.
- Check that vehicle ignition is ON.
- Check all connections.

The RX45's display feels very warm.

- It is normal for the RX45 to feel warm.

## Explanation of Displays

### Check Receiver Wiring

There is a problem with the front receiver (it could be an unplugged connection, damaged wiring, or a problem within the front receiver itself). The RX45 will continue to display this message, and will not operate until the problem has been repaired

### PilotHilY

One of the many options in Preferences (pages 12-15)

### WorkZone

One of the many Safety Radar messages (pages 22-23)

### Caution

RX45 has detected a Safety Radar Signal, but the signal isn't yet strong enough to decode the specific safety message (page 22-23)

### X2, or K2, or Ka2 etc.

RX45 has been programmed in the ThreatDisplay Mode (pages 10-11)

### RCUR err

RX45 has failed to calibrate. Contact your Dealer for repair

**Service Procedure**

If your RX45 ever needs service, please follow these steps:

**1** Check the troubleshooting section of this manual. It may have a solution to your problem.

**2** Contact your installing dealer. They will evaluate your unit and arrange repairs if necessary. If you installed it yourself, please contact our customer service team.

**BELTRONICS One Year Limited Warranty**

BELTRONICS warrants your RX45 against all defects in materials and workmanship for a period of one (1) year from the date of the original purchase, subject to the following terms and conditions:

The sole responsibility of BELTRONICS under this Warranty is limited to either repair or, at the option of BELTRONICS, replacement of the RX45 detector. There are no expressed or implied warranties, including those of fitness for a particular purpose or merchantability, which extend beyond the face hereof. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

This warranty does not cover installation, removal or reinstallation charges.

BELTRONICS is not liable for any incidental or consequential damages arising from the use, misuse, installation, or mounting of the RX45. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This Warranty gives you specific rights. You may have other legal rights which vary from state to state. This Warranty does not apply if the serial number on the housing of the RX45 has been removed, or if your RX45 has been subjected to physical abuse, improper installation, or modification.

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▼ Remove card along perforations ▼

**BELTRONICS® PRODUCT REGISTRATION CARD**

- ▲ If you purchased your detector directly from BELTRONICS, you do not need to fill this out.
- ▲ If you did not purchase your detector directly from BELTRONICS, please fill out this section and return to us, or register online at our web address: [www.beltronics.com](http://www.beltronics.com).

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Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
Phone Number (In case we have a question) \_\_\_\_\_ Serial Number \_\_\_\_\_
2. Product Purchased **BELTRONICS RX45**
3. Place of Purchase \_\_\_\_\_ Date \_\_\_\_\_ Price \_\_\_\_\_
4. Primary reason for purchasing this BELTRONICS product \_\_\_\_\_

## Parts and Accessories

### Parts

Replacement parts are available from [beltronics.com](http://beltronics.com) or your dealer.

### Accessories

Accessories are available from [beltronics.com](http://beltronics.com) or your dealer.



#### SHIFTER PACK

*Shifter Pack* ..... \$249.95

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